THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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SCIENCE SERVICE
B and 21st Streets
WASHINGTON, D. C.

EDWIN E. SLOSSON, Director
WATSON DAVIS, Managing Editor

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Vol.VII,No.239 Saturday, November 7,1925

INTERNATIONAL INSTITUTE AIDS WORLD INTELLECTUAL ENDEAVOR

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Staffed by noted scholars of many nations and covering all branches of intellectual endeavor, the International Institute of Intellectual Cooperation is expected to be a vital factor in the world interchange of data of scientific,legal, literary, artistic, journalistic, and other such intellectual pursuits.

Financial support of the Institute to the extent of 2,000,000 francs a year has been pledged by the French Government and the offices will be in the historic Palais Royal. Yet among the major members of the League's staff, only the direct M. Julien Luchaire, at present Inspector General of Education in France, is a Frenchman,

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The governing board of the new institute consists of the League of Nations' Committee on Intellectual Cooperation whose membership includes such noted schol r as Einstein, Bergson, Millikan, Hale, Mme. Curie, Gilbert Murray, Lorentz, Kello and other leaders in science , literature and the arts.

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TECHNOLOGY

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National Committees on Intellectual Cooperation in many countries have been organized to aid the International Institute and the League Committee in its work.

An American committee has been formed with Dr. Robert A. Millikan, Nobel prize winner in physics and president of the California Institute of Technology, as chairman.

This important group, merging for the first time in a formal way the scientific, artistic, literary, legal, educational and other learned activities of the country, will collaborate with the International Institute of Intellectual Cooperation.

The first meeting of the American Committee will be called early this winter.

The membership of the committee includes: Dr. Millikan, Elihu Root, past president American Bar Association; George E. Hale, honorary chairman National Research Council; Charles H. Haskins, chairman of the Council of Learned Societies; Herbert Putnam, librarian of Congress and past president of the American Library Association; Virginia C. Gildersleeve, president International Federation of University Women; Lorado Taft, member of the American Academy of Arts and Letters; James H. Breasted, representative American philoogical organizations;Charles W. Eliot, president emeritus of Harvard University, representative American universities; Augustus Trowbridge, International Education Board; C. R. Mann, director American Council on Education, and Vernon Kellogg, secretary of the commision.

BACTERIAL LIFE FOUND DEEP BELOW EARTH SURFACE

First direct evidence of the existence of living things a thousand feet or more beneath the surface of the earth is claimed by Dr. Edson S. Bastin, head of the department of geology at the University of Chicago, and his associates Frank E. Greer and Gail Moulton.

During the past summer the party, working in cooperation with the Illinois StateGeological Survey,made chemical and bacteriological analyses of oils and associated waters from twenty-five oil wells of southern Illinois. The samples were taken from continuously flowing wells, the depths of which range from 500 to 1500 feet below the surface. In twenty-three out of the twenty-five samples, cultures made in the University bacteriological laboratory show an abundance of bacteria.

"Ever since reading Sir John Murray's classic ocean researches," said Dr. Bastin, "I have always suspected the presence of bacteria in natural oil and its associated waters. Murray found that the waters enclosed in the black muds at the bottom of the ocean were different in composition from the typical ocean waters above them. The conspicuous differences were the paucity of sulphates and the abundance of hydrogen sulfide gas, having the odor of rotten eggs.

"Surely, the last place where one would think of finding living and thriving organisms is a thousand or more feet below the surface, encased in seemingly impervious rock. But since the cultures give undoubted proof of their presence I do not credit bacteria with being the least fastidious as to the situations in

which they live.

"One is inclined to discredit the presence of bacteria more than a thousand or more feet below the surface because of the food problem," said the investigator. "But the lack of sulphates and the presence of hydrogen sulfide gas leads us to believe that the minute organisms are eating the sulphates and giving off hydrogen sulfide gas as a waste product of their simple bodily processes."

The bacteria found in the oil sands are, moreover, similar to those living in the ocean today, Dr. Bastin said. This is not surprising when we note that the oil-field waters are very similar to ocean waters in chemical composition. They are believed by many geologists to be ancient sea waters buried within the rocks millions of years ago and there preserved, with minor changes, to the present day.

"Whether the bacteria in the oil-field waters are the lineal descendants of those living in the ancient seas and buried alive at the time the rocks were laid down in the sea-bottom, or have been introduced into the rocks later from the underground water circulation, is an interesting question that perhaps can never be answered," Dr. Bastin said. "It is entirely within the realm of possibility, however, that bacteria may have existed in these oil-sand waters from very ancient times, for bacteria were among the earliest forms of life to appear on the earth, as is shown by the preservation of their impressions in some of the oldest rocks known to the geologist."

EARTH HEAT MAY REVEAL HIDDEN OIL FIELDS

New oil fields and other valuable mineral deposits in regions where the telltale rock structures now lie buried far below the surface and random drilling is impractical, may be discovered at a relatively low cost by means of measurements of the heat in deep wells, is the suggestion of W. T. Thom,Jr., geologist in charge of the division of fuels of the U. S. Geological Survey.

Series of temperature measurements taken at different depths in wells of the Salt Creek dome in Wyoming, he said, show that there is a direct relation between these temperatures and the shape of the folds in the rocks associated with oil deposits. The sharpest rise in temperatures has been found near the crest of the dome and proportionately less sharp increases at various points on its flanks. Similar temperature differences have also been found in artesian wells in eastern North and South Dakota.

These relationships suggest,Mr. Thom said, that they may be used to locate concealed uplifts and buried hills such as control oil production in south-central Oklahoma and California. A single well showing an abnormally sharp rise in a series of measurements at different depths would indicate the existence of an uplift in nearby rock strata. Two wells would give a possible clue as to their relative position on the uplift, and three wells would give a suggestive guide as to the general direction in which the crest of the concealed uplift would lie.

Not only would this in many places reduce the amount of exploratory drilling required to discover oil and gas pools associated with such features, but small

holes for temperature measurement could be put down the necessary thousand or more feet with a diamond drill at a much lower cost than for ordinary oil well drilling. Moreover, systematic study of existing holes and artesian wells may lead to the discovery of oil in regions not now seriously considered, and yield enough evidence to justify wildcat testing of the oil possibilities of deeply covered rocks in the Great Plains states.

This method would serve as an effective supplement to other methods now being used, Mr. Thom stated, and would in no sende supplant them . Mr. Thom's theory is that the rock strata were first folded up; then, in the course of geological time the top of the fold was cut off by weathering, exposing the deeper-lying and hotter rocks at the crest of the ridge or dome.

TUBERCULOSIS VACCINE TRIED ON AFRICAN APES

A series of experiments, continuing the efforts of years to find an effective vaccine against tuberculosis, are being carried out in tropical West Africa on the manlike apes. Dr. J. Wilbert, who has announced promising results for the Pasteur Institute of Paris, does not, however,venture to say how these may lead to the ultimate goal, anti-tuberculosis vaccination in man.

The experiments carry on the pre-war work of Dr. A. Calmette and C. Guerin, who produced a vaccine of tuberculosis organisms greatly reduced in virulence, which, they have repeatedly claimed, confers immunity without giving the disease. According to Calmette, the only effect of vaccination with this serum is to produce a "general disease like typhoid fever which cures itself spontaneously after fifteen to twenty days without causing the slightest tubercle formation."

Calves, guinea pigs, rabbits and monkeys treated with a small dose of the substance, he stated, appear to become highly resistant to tuberculosis. The war caused a postponement of his attempt to carry the experiments further by trying the serum on man's nearest biological relation.

Human conditions were reproduced as far as possible in the ape colony. Fifty-nine chimpanzees lived under similar donditions of exposure. Nineteen were vaccinated, twenty were infected with virulent tuberculosis germs and twenty were kept unvaccinated as control animals whereby to judge the rest.

Of the nineteen vaccinated, eleven died of various causes but never showed any sign of tuberculosis even at death, and the other eight are now in good health. Of the twenty unvaccinated animals kept as controls, nineteen died of tuberculosis and the other of an acute infection of another kind, Of the twenty animals infected with virulent tuberculosis, nineteen died of the disease and the other of intestinal trouble. Thus out of fifty-nineapes, only eight are now alive and all of these had been vaccinated.

On account of the intense cold in the Yukon, a Canadian company plans to erect an underground mill for dressing ore from its gold mine.

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AMERICAN EXPEDITION TO EXPLORE GREENLAND'S ICY MOUNTAINS

An expedition to penetrate into the interior of the great ice sheet covering Greenland and learn the secrets of the weather in that area is being organized this winter by Prof. W. H. Hobbs, of the University of Michigan, an authority on glaciers and geology.

Equipped with airplanes for preliminary exploratory work, with radio apparat adequate to maintain constant communication with the outside world, and with scie tific instruments to record meteorological data and observe the movements of the great Greenland glaciers, the party to be headed by Prof. Hobbs will start for t far northern Danish island-continent of Greenland in July of next year.

One of its objects will be the establishment of a weather observing station o the great plateau of ice some 150 miles inland, and 6,000 to 7,000 feet above sea level. Never before has this been accomplished. Prof. Hobbs plans to maintain a observing staff at this station for a year in order to give to the meteorologists of the world information about the behavior of the weather in that part of the world which seems to be the place where storms either are born or die. The data to be radioed to civilization are expected to aid materially in the making of the daily weather forecasts in Canada and the United States.

The expedition will be under the auspices of the University of Michigan where Dr. Hobbs is professor of geology. Several American governmental bureaus interes ed in the scientific problems of the arctic have promised active participation in the expedition and the expedition will also cooperate informally with Dr. Lange Koch, leader of the Danish government's scientific party which will tak the field at Scoresby Sound onthe east coast of Greenland in July, 1926, at about the same time that Prof.Hobbs' party is establishing its base nearly directly opposite on the west coast at Holstensborg, just below the arctic circle. Dr. Koch, who has had long training and experience in explorations in Greenland, will trek directly across the continent of Greenland from east to west, making scientific observations during the two months' journey. Previous to this he plans to map and investigate the geological features of the unknown portion of the west Greenland coast.

Regular exploration of the wind currents and temperatures of the upper air will be a feature of the routine observations at the two stations to be establi ed by Prof. Hobbs. Large rubber sounding balloons will be used for this purpose Since the inland station on the ice sheet will be over a mile high above the se and the coast station off the edge of the glacial ice will be over a half-mile high, it is expected that the balloons will succeed in probing and revealing the weather secrets of unusually high altitudes.

At least two airplanes with pilots and mechanics will be a part of the expedition and the rest of the party is now in the process of organization. Radio communication on short wave length will be provided between the two stations as well as with the United States.

The Philippines produce one third of the world's supply of dried coconut meats from which coconut oil is extracted.

INFLUENZA AUTHORITY SAYS PLAGUE MAY COME AGAIN

Declaring that it is impossible to prevent altogether another epidemic of influenza by methods of quarantine and isolation, Dr. E. O. Jordan, head of the University of Chicago department of bacteriology, discussed the efficacy of various preventive measures before the American Public Health Association in session at St. Louis.

Practical difficulties in the way of administering efficient vaccination on a world-wide scale during an influenza outbreak seem so insuperable that we can hardly make it the basis of a protective campaign, he said. Face masks, he characterized as having limited applicability. Chlorine and similar gases he dismissed because they have not yet proved of decisive prophylactic value.

"I believe ,however, " Dr. Jordan continued, "that something can be done to lower the attack rate in favorably situated small groups, to protect some individuals altogether and to lessen the virulence on the part of the accessory microbes Difficult to apply, and uncertain of success as it may be, the minimizing of contact seems at present to offer the best chance we have of controlling the ravages of influenza.

"It is now clear that the first estimates of the loss of life caused by the influenza epidemic of 1918 were too low. The disclosures of the census of British India of 1921 and other data that have since come to hand make an estimate of 20,000,000 deaths in the whole popilation of the world probably not wide of the mark. This is comparably the worst catastrophe of the sort that has visited the human race since the Black Death of the Middle Ages.

"Judging by the past nothing is more certain than that we shall some day have another visitation of this destructive infection. It is not to be doubted that if it were to descend upon us tomorrow we would, as public health workers and students of the disease, be little if at all better equipped to deal with it than we were seven years ago. It is conceivable, however, that if we occasionally remind ourselves of the gaps in our knowledge we shall be in a position to study more advantageously the manifestations of the disease even inthe presence of an epidemic period. There are certainly also lines of direct investigation which can be prosecuted today with some hope of rendering ourselves better prepared to cope with the next epidemic."

If the influenza was not a new disease in most parts of the world it certainly was greeted like one and behaved like one, Prof. Jordan continued. In many parts of the world the time of importation of the new disease, if it was a new disease, into a region where the so-called endemic influenza had previously prevailed, could be specified to a day.

"Its introduction into certain army camps in the United States is known to the day and hour,"Dr. Jordan stated.

Automobiles killed 20,000 people in this country last year and injured 600,000.

EARTHQUAKE PUZZLES GOVERNMENT SCIENTISTS

Where was the earthquake that shook the earth enough to make a record on half a dozen or more seismographs, Monday morning, October 19 ? This is the question that is now puzzling the seismologists of the U.S. Coast and Geodetic Survey, especially Commander N. H. Heck, who is in charge of the Survey's earthquake investigations.

"We have received telegraphic reports through Science Service from seismograph stations at the Dominion Observatory , Ottawa, Canada; Fordham University, New York; Georgetown University, Washington; Regis College, Denver, Colorado; the U.S. Weather Bureau at Chicago, and our own stations at Tucson, Ariz., and Cheltenham, Md., but we are unable to find the center of the disturbance," says Commander Heck. "It is hardly likely, however, that it was in the St. Lawrence Valley, as one report stated, because the time that the first tremors arrived at Ottawa was very nearly the same as that for Georgetown. If it had been so much closer to the former station, they would have felt it considerably earlier. The time the tremor arrived at New York is different from these, which adds further to the confusion. Perhaps there were two separate quakes, which were mixed up together; or it may b that the quake was of a peculiar type, that, fortunately for us seismologists, is rather rare, where it is almost impossible to determine the times of the different phases of thetremors. It is the times of these phases that enable us to compute the distance. I would say that, on the basis of what information we have, its center may have been in the region of Montana or Alberta, Canada, but this is not at all certain, and until we receive reports of damage done, this hypothesis cannot be verified."

EARTHQUAKE TRACED TO ATLANTIC OCEAN BED NEAR SOUTH AMERICA

The severe earthquake which was recorded on seismographs in widely distant parts of the world on Tuesday, October 13, has been traced to a part of the Atlantic Ocean about 800 miles northeast of the mouth of the Amazon, according to Commander N. H. Heck, in charge of the seismological investigations of the U.S. Coast and Geodetic Survey.

"The center was at latitude 10 degrees north and longitude 42 degrees 30 minutes west of Greenwich," said Commander Heck. "We have determined this position through telegraphic reports gathered by Science Service from seismologic stations at the Dominion Observatory, Ottawa, Canada; Fordham University at New York City; the Survey's stations at Tucson, Arizona, and Cheltenham, Md, and the private observatory of J. J. Shaw at West Bromwich, England. The ocean is nearly 16,000 feet deep at this point but as our maps show nothing unusual there, it is likely that the center ofthe disturbance was below the ocean bottom. A similar quake occurred at the same point in December ,1918."

While all other nations took their food withtheir fingers , the Chinese invented chop-sticks andfirst practiced good table manners.

OPTICIANS DISCUSS COLOR NAMES

What shall the various characteristics of colors, interesting alike to the artist and physicist, be called? Heretofore almost everybody who has written on the subject has had his own private system of naming, and in an effort to introduce some uniformity, the Optical Society of America appointed a committee to study the various systems of names. According to the report of this committee, questionnaires were sent to representatives of the three groups of art and art education, industry, and research.

"Light" is the term most preferred for the "force by which objects are rendered visible", other suggestions being radiation, radiant energy and luminosity. "Gray" received the most votes for what is commonly called by the name, but "neutral color" and "achromatic colors" found a large number of adherents. "Value" and "brightness" was preferred to designate an arrangement where the samples became lighter.

FIELD MUSEUM EXPEDITION TO EXPLORE MADAGASCAR

The almost unknown interior of Madagascar, off the east coast of Africa, will be the objective of an exploration trip by Ralph Linton, assistant curator of ethnology at the Field Museum of Natural History in Chicago. Mr. Linton is now on his way to Europe, where he will spend a short time in study in the museums of England and France before leaving for the island. He expects to spend two years among the natives of the interior of Madagascar, who include such diverse racial stocks as descendants of Arabian exiles, negritos from Africa, and tribes in the southern part of the island to whom white men are practically unknown beings.

PLAN CENSUS OF CUBAN FOREST TREES

An exploration party under the combined auspices of the Tropical Plant Research Foundation and the U.S. Department of Agriculture has set out to discover what's in the woods in Cuba. The purpose is to learn what is the mostprofitable way of utilizing the Cuban forests and to find out what kind of insect pests are most harmful and how to combat these. The party, which expects to complete its work in a year, consists of Dr. H. N. Whitford, Dr. J. R. Weir, mycologist and forest pathologist of the U. S. Department of Agriculture, and one trained assistant.

RADIO PRIZE AWARDED FOR SHORT WAVE RESEARCH

The Morris Liebmann Memorial Prize for this year, one of the two annual awards made by the Institute of Radio Engineers, had been awarded to Frank Conrad of the Westinghouse Electric and Manufacturing Company. This honor is in recognition of his research work in the transmitting and receiving of short wave length radio.

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HEREDITY, GLANDS AND MODE OF LIVING MAKE PEOPLE FAT

Why some persons are fat and others thin is almost as much of a secret as ever, Prof. A. J. Carlson, physiologist from the University of Chicago, told members of the American Dietetic Association meeting at Chicago. While some people may be born to be fat, the mode of living is an important factor, it affects the rate of metabolism, or the chemical processes within the body.

"It is well known in animal husbandry that certain breeds of animals on the farm put on more fat than others," Prof. Carlson stated, "but this may be due to a difference in bodily activity characteristic of the different breeds. The idea that heredity is actually involved remains, however, as a working hypothesis with many investigators."

People get fat in middle age, Prof. Carlson thinks, because there is less physical strain and activity as they become more and more accustomed to regular routines. The violence and exertion of youth give way to calm moderation. Often the aging of the tissues involves local deposition of fat, and aging becomes a sort of fatty degeneration. With age comes also a decrese in the power of some of the glands to release their hormones in to the blood stream. Of these, the thyroid, the hypophysis, and the sex glands are often believed to exercise an effect on fat formation.

The removal of the sex glands in man often makes the subject fatter, but the results are very inconstant; in animals the effect is even less pronounced. The metabolic rate, or in other words, the speed with which the body uses up food and oxygen, is so slightly lowered by the removal of these glands that they can hardly be held responsible for the increase in fat when this does occur, Prof. Carlson thinks.

The part that the thyroid gland plays is equally obscure and confusing. In some cases fatness was held to be the result of low thyroid activity and the claim appeared to be correct when feeding of thyroid extract corrected the condition. But the puzzle remained unsolved, when the removal of part or all of the gland failed to make laboratory animals any fatter. A great deal more experimental work is necessary, Prof. Carlson said, before the effect of these various factors can be definitely known and the problem of the fat person solved.

NEW DYE AIDS PHOTOGRAPHY BY INVISIBLE LIGHT

Photography by infra-red waves, light which vibrates too slowly to be visible, will be more easily accomplished by the use of a new dye, neocyanine, developed at the Eastman Kodak Company's Research Laboratory by M. L. Dundon, A. L. Schoen and R. M. Briggs, and described before the American Optical Society. Photographic plates treated with this dye before esposure become sensitive to these rays, and it is said to be more efficient than dyes hitherto used for the purpose.

A half-million tons of waste apples are produced each year in the United States.

TELLS HOW TO SEE YOUR OWN "NERVE CURRENTS"

"If in an otherwise dark room you look at a vertical strip of bright red light you will see proceeding from it on both sides two rather large luminous arcs, slightly reddish blue in color," Dr. Christine Ladd-Franklin, of Columbia University told members of the Optical Society of America, meeting at Ithaca, N.Y. This is due, she explained, to a property of the nerve fibers of theeye that they have not previously been known to possess. As the nerve fibers carry the sensation of color from the part of the sensitive lining of the eye on which the red light falls, they theselves give off the reddish-blue light and cause the colored arcs. These arcs correspond to the position of the nerve fibers.

TABLOID BOOK REVIEW

EVOLUTION FOR JOHN DOE. By Henshaw Ward. New York: Bobbs-Merrill. 1925 $3.50

The roar of the Battle of Dayton has died out into the bickering s of rear-guard skirmishes, but every one knows that during the coming winter there will be hot engagements in every state legislature that is in session: evolution is a subject very much alive in the popular interest and probably will continue to be so for several years to come. It is therefore a subject for congratulation that this very clear and comprehensible statement has been prepared for that mythical person who lives, under one alias or another, inside every man's coat. "We are all laymen on every subject but out own specialty." While he carefully avoids jaw-breaking technicalities, Mr. Ward does not insult the intelligence of his readers by a patronizing air of "writing down" to them. On occasions, however, there is something of an air of exasperated patience, quite justifiable when one is contradicting a thousand-times-repeated falsehood, such as the common claims that "scientists themselves are abandoning evolution", or the opposite exaggerations, like "evolution is the only cause of progress". Mr. Ward's book is one for the trained biologist to recommend to his non-biological friend. For that matter. the trained biologist will find himself cutting all of theleaves if he starts to read it himself, for it is most attractively written, and the pictures are uniformly good.

ANIMALS OF LAND AND SEA. By Austin H. Clark. New York D. Van Nostrand Co. 1925 $3.00

This is an excellent example of a class of books that is achieving great and deserved popularity with the American reading public, informal scientific works that are as remote as possible from textbookiness, and by the same token the nearer to human affairs and interests. Mr. Clark begins with man and his relations to the animal world, both as the eater and the eaten, and then ranges freely all over the field. He has the overflowing copiousness of the *raconteur*, without pretense to the meticulous and tiresome exhaustiveness of the teutonic type of pedagog. He spills fascinating facts all along his track, like an overloaded apple-wagon; and he scatters his seven hundred and forty pictures with the same free hand, careless whether they fit exactly with the text of the page where they occur. He knows that we all look at the pictures first, anyway. Although obviously designed for the "lay" reader, this book merits a place as a reference volume in school libraries, for many of the things Mr. Clark talks about are not in the ordinary run of zoology texts.
